JOINT COMMENT TO PROPOSED REMEDIAL PLAN OF THE NEW CASSEL/HICKSVILLE GROUNDWATER CONTAMINATION SITE

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INTRODUCTION

The United States Environmental Protection Agency ("USEPA") has proposed a Remediation Plan for the New Cassel/Hicksville Groundwater Contamination Site ("Proposed Plan") that is flawed and inconsistent with the law. First, USEPA's Conceptual Site Model is fundamentally flawed. It fails to consider a substantial amount of relevant data related to the New Cassel Industrial Area ("NCIA"), and in addition relies on data collected from temporary monitoring wells using inappropriate methods and that have unreproducible results. Thus, the Proposed Plan is not based on a correct understanding of the contamination at the NCIA. Second, the Proposed Plan will greatly disrupt the NCIA community without conferring a concomitant benefit. Third, the Proposed Plan ignores that there is currently a remedy in place — granulated activated carbon and air stripping -- which has adequately addressed the contamination for decades without the exorbitant cost and extreme disruption that the Proposed Plan necessarily entails. Fourth, the immense cost of the Proposed Plan prevents it from being consistent with the National Contingency Plan. As a matter of law, any remedy must be cost effective, and the Proposed Plan is not. Finally, because it is likely that any action to recover the costs of the

Proposed Plan would be time-barred, the USEPA should reject the Proposed Plan in favor of a cost-effective and achievable plan — continued well-head treatment at the Bowling Green wells combined with monitored natural attenuation.

I. USEPA'S CONCEPTUAL SITE MODEL – THE BASIS FOR THE PROPOSED PLAN – IS FUNDAMENTALLY FLAWED AND DOES NOT CHARACTERIZE GROUNDWATER CONTAMINATION CORRECTLY.

USEPA's Conceptual Site Model ("CSM"), which serves as the basis for its Proposed Plan, relies on incomplete data collected from within OU-1 and fails to take into account the massive amounts of environmental and investigation-related data upgradient of OU-1 collected over the past 3 decades. In addition, the plume chemical signature definition approach used by USEPA (chlorinated ethenes molar ratio analysis) is inappropriately implemented, leading to incorrect conclusions regarding the sources of the groundwater contamination observed in OU-1. Critical data relied upon by USEPA was collected using inappropriate methods. Furthermore, USEPA's decision to ignore the so-called "Upgradient Plume" from Sylvania and General Instruments (GI)/Vishay in selecting the proposed remedy for OU-1 is a critical error as the "Upgradient Plume" has both historically contributed and continues to contribute contaminated mass to the groundwater found at OU-1. As discussed in detail below, USEPA's failure to consider all available data from the NCIA, OU-1, and the "Upgradient Plume" from Sylvania and General Instruments (GI)/Vishay, and its failure to use actual groundwater flow directions that were determined by the New York State Department of Environmental Conservation ("NYSDEC") have resulted in a CSM that is inaccurate and unreliable and that Proposed Plan based upon that CSM is thus unsupportable.

A. A significant amount of critical data collected from within the NCIA, upgradient of the NCIA, and in OU-1 were not considered by USEPA in the Proposed Plan

Groundwater and soil data have been collected for more than three decades in areas both within and upgradient of OU-1. More than 7,400 soil and groundwater samples have been collected from over 1,100 locations within and adjacent to the NCIA, OU-1, the Upgradient Plume (Figure 2.1). Consideration of this data is crucial to an understanding of the source of the current OU-1 groundwater plumes and the fate of the plumes over time. A summary of the key investigations that have been performed are:

- *Bowling Green Estates Water District ("BGEWD") Sampling:* Groundwater samples have been collected from the BGEWD drinking water supply wells by the Nassau County Department of Health ("NCDH") beginning at least as early as 1977 and have been sampled routinely since then. (NYSDEC, 2000) These samples provide a fuller understanding of the timing and nature of the contamination reaching the BGEWD supply wells, as well as the evolution of the groundwater plumes observed in OU-1 than the data used by the USEPA. The USEPA failed to take into account these data.

- *USGS/NCDH Investigations:* Between 1983 and 1985, NCDH installed 30 wells within the NCIA, primarily in the central and western portions, 6 wells north (upgradient) of the NCIA, 5 wells within OU-1, and 3 wells south or west of OU-1 (NCDH, 1986). In total during this time, 128 groundwater samples were collected and analyzed (NYSDEC, 2000 213-6905). Between 1986 and 1991, USGS installed 22 additional wells both *within and downgradient* of the NCIA; during this time, more than 350 groundwater samples were collected and analyzed (USGS, 1996. NYSDEC, 2000). The USEPA failed to take into account these data.
- *NYSDEC Preliminary Site Assessments (PSAs):* Due to the detection of chlorinated organics at the BGEWD supply wells, although at levels that were below the Maximum Contamination Levels ("MCLs"), NYSDEC performed a series of investigations to determine the source(s) these chemicals. As part of these Preliminary Site Assessments (PSAs), which were conducted between 1992 and 1997, more than 900 groundwater and 250 soil samples were collected from sites within the NCIA (LMS, 1994; LMS; 1995 , LMS, 1996 ; LMS, 1997). The USEPA failed to take into account these data.
- *Supplemental NCIA Investigations and Remedial Actions:* As a result of the PSAs, NYSDEC identified 17 sites within the NCIA, which the agency contended were inactive hazardous waste sites (NYSDEC, 2003). Soil and groundwater samples were collected at each site and were used to design, implement, and monitor remedial actions. In total, more than 1700 groundwater samples and 300 soil samples were collected and analyzed between 1997 and 2010 during these remedial activities (Appendix A).. The USEPA failed to take into account these data.
- *Upgradient Plume Investigations:* Between 1981 and 2010, over 2,300 soil and groundwater samples were also collected both on the Sylvania and GI/Vishay properties and downgradient of the properties. The USEPA failed to take into account these data.
- *NCIA and Off-Site Groundwater Investigations:* Additional investigations were performed by NYSDEC within the NCIA and OU1 between 1999 and 2000 (LMS, 2000). Four shallow groundwater monitoring wells were installed and vertical profile data were collected from four hydropunch locations. In total, over 140 groundwater samples were collected and analyzed (LMS, 2000).
- *Off–Site Groundwater Investigations:* Between 2008 and 2011, three different Pre-Design Investigations (PDIs) were performed on behalf of NYSDEC in the area downgradient of the NCIA. The first was performed by Dvirka & Bartilucci ("D&B") in 2009 (209-3163), the other two were performed by HDR in 2010 (210-7279) and 2011 (213-6532). In total, D&B and HDR installed 30 monitoring wells and collected and analyzed more than 150 groundwater samples during this time period. The USEPA failed to account for all the data collected and failed to account for the unreliability of these data and the inappropriate sampling techniques used in collecting these data.

Appendix A lists all the studies that USEPA should have but failed to consider in the development of the CSM and the Proposed Plan. These studies are not referenced or identified in the RI Memorandum or CSM.

Despite the presence of a significant amount of data from inside, near and upgradient of OU-1, USEPA has relied on a limited and unrespresentative dataset in the development of its CSM for OU-1 and its selection of the remedial actions specified in the Proposed Plan.[1] In summary, the data not considered by USEPA include, but are not limited to the following (Figure 2.1):

- Over 2,500 groundwater samples collected from locations within the NCIA;
- Over 150 groundwater samples collected from locations within OU-1; and
- Over 2,500 groundwater samples collected from locations associated with the Upgradient Plume – including samples from within OU-1.

These data are critical for understanding the location, characteristics and source(s) of the plumes that originate from the NCIA and the upgradient parties, as well as the chemical signature of the plumes at the source areas, and the fate and transport characteristics of these plumes as they migrate into OU-1. A CSM which is based upon an incomplete and incorrect understanding of the nature, extent and fate of contamination cannot adequately support decisions regarding a remedy. One of the critical flaws in the USEPA analysis, the incorrect assumption that the OU-1 plumes originate only from NCIA-located sources, stems from USEPA's inadequate examination of groundwater quality at the NCIA source areas, since USEPA did not review and utilize for its analysis environmental data collected within the NCIA over the past three decades.

B. Flawed data from temporary monitoring wells, relied on by USEPA, were collected using inappropriate methods and are not reproducible

Flawed data, relied on by USEPA, were collected using inappropriate methods. Nine temporary monitoring wells ("TMWs") were installed in 2008 as part of the PDI conducted by D&B (2009; Figure 2.2) for the NYSDEC. Seven of the nine temporary wells were installed and sampled inappropriately, resulting in cross-contamination between the shallow and deep groundwater samples. Furthermore, groundwater quality data from the TMWs are not reproducible. For these reasons, USEPA erred in relying on the sampling data from these seven wells without qualification and far greater care.

1. Use of Hollow Stem Augers May Have Caused Cross-Contamination.

Seven of the nine TMWs installed in 2008 were each drilled to 285 ft-below ground surface (ft-bgs) with a Hollow Stem Auger ("HSA"). The use of HSAs for this type of well installation is inappropriate because soil and groundwater are transported up the auger flights; these drill cuttings contact the sides of the borehole as they are raised and cause cross-contamination between different depth intervals. The following reference sampling manuals warn about cross-contamination that is associated with the drilling methods used by D&B.

[1] Figure 2 of its Proposed Plan (USEPA Region II, 2013a) presents the data that USEPA used to generate the depictions of the OU-1 plumes, which forms the basis of their CSM.

- *Guidance Manual for Groundwater Investigations (CalEPA, 1995, p. 17):* "Because drill cuttings are in contact with the entire length of the borehole as they are transported up the auger flights, hollow-stem augers may cause cross-contamination of sub-surface materials."
- *Handbook of Environmental Site Characterization and Ground-Water Monitoring (Einarson, 2006. pg. 834):* When using HSAs, "contaminants can be smeared against the borehole wall. This can impart a long-lived positive bias to groundwater samples collected from a multi-level well."
- *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers* (USEPA, 2002, p.11): "The effects of cross-contamination can be minimized by sampling the last contaminated (zone) first and progressing to the more contaminated (zones).

2. USEPA Sampling Protocols Were Not Observed in 7 Out of 9 Wells.

Furthermore, the sampling protocols used at these seven TMWs by D&B were inconsistent with proper sampling protocol. D&B collected samples first from the deeper sampling horizons that have higher levels of contamination, and then as each temporary well was raised, samples were collected from shallow, relatively clean groundwater. The USEPA itself recommends collecting samplings from the most impacted zones last in order to minimize cross-contamination (USEPA, 2002). The exact opposite technique was used here. Despite this obvious error, the USEPA utilized the flawed TMW data in its remedy selection procedure.

3. The Deficiencies Resulted in Flawed Data.

Groundwater quality data at each of the seven TMWs demonstrates that shallow groundwater was cross-contaminated due to the inappropriate sampling technique utilized (*i.e.*, sampling deeper horizons first, and then moving up within the borehole). The downward flow gradient in the Magothy Aquifer carries plumes vertically downward with the groundwater, as they migrate laterally away from source area(s). Because the TMWs were installed generally at least several thousand feet from the NCIA source areas, we would expect that most groundwater impacts would be at depth and that the shallow groundwater would be relatively clean. However, at all seven of these TMW locations, shallow groundwater quality impacts were observed, contrary to normal plume behavior in an aquifer with a downward vertical hydraulic gradient. Groundwater quality impacts observed in shallow groundwater, defined as the 50 to 150 ft-bgs depth interval (roughly, the top 100 feet of the water column), are summarized below (Table 2.1; Figure 2.3 and 2.4):

Table 2.1. Impacts Reported For Shallow Groundwater at select TMW Wells.

Temporary Well ID	Maximum Detected Concentration in Shallow Groundwater (µg/L)	
	PCE	TCE
TMW-1	270	61
TMW-2	250	310
TMW-4	57	17
TMW-5	330	870

TMW-6	14	63
TMW-7	870	45
TMW-9	280	120

Significantly two other TMWs were installed during this investigation using a more appropriate method (TMW-3D and TMW-8D – both to 500 ft-bgs). At these locations, samples were collected starting in the shallow groundwater and working downward as the drilling progressed (from the least-impacted zone to the most-impacted). Groundwater concentrations at these two locations contradict the data from the other seven TMWs: they are consistent with what one would expect in a downward-trending plume; no groundwater contamination was detected to a depth of 150 ft-bgs (approximately 100 ft below the water table) at TMW-3D and until 250 ft-bgs (approximately 200 ft below the water table) at TMW-8D (Figures 2.3 and 2.4). At the two TMWs where USEPA recommended protocols were observed, contamination was only noted in the deeper groundwater.

Groundwater samples collected using permanent monitoring wells confirm that the data from temporary wells TMW-1, TMW-2, TMW-4, TMW-5, TMW-6, TMW-7and TMW-9 are unreliable. During the PDI performed in 2011 (HDR), permanent monitoring wells and extraction wells were installed adjacent to several of the prior temporary well locations. Monitoring wells MW-11S and MW-11D were installed adjacent to TMW-1; extraction well EX-2 was installed south of TMW-2 (Figure 2.2). Samples collected at the new permanent well locations from the same depth intervals contained significantly lower concentrations of key compounds (PCE, TCE, and TCA), some dramatically lower, than were detected in the nearby TMWs sampled using flawed techniques in 2008 (Table 2.2).

Table 2.2 Comparison of Data Collected at 2008 Temporary Wells and 2011 Permanent Wells

Well ID	TMW-2	EX-2
Date	8/18/2008	4/12/2011
Sample Depth (ft-bgs)	285	285
PCE (µg/L)	390	130
TCA (µg/L)	3.4	ND
TCE (µg/L)	1,400	140

Well ID	TMW-1	MW-11S	TMW-1	MW-11D
Date	8/27/2008	4/4/2011	8/26/2008	4/4/2011
Sample Depth (ft-bgs)	225	225	285	285
PCE (µg/L)	3,700	140	530	460
TCA (µg/L)	21	3.8	18	10
TCE (µg/L)	230	190	650	400

ND = Not Detected.

USEPA acknowledged in the Supplemental Feasibility Study (USEPA, 2013) that "there is greater uncertainty with the groundwater sampling data collected from the temporary well locations relative to the permanent monitoring locations." This uncertainty is exacerbated by the

inability to reproduce the sample results collected from the TMWs and the likely cross-contamination that has impacted the shallow groundwater data at seven of the TMW locations. Despite its own misgivings about the data, USEPA used it in its remedy selection process.

II. THE PROPOSED PLAN WILL BE DISRUPTIVE TO THE COMMUNITY AND WILL PROVIDE LIMITED BENEFIT

A. The August 13, 2013 Meeting was Inadequately Promoted and Poorly Attended.

The adverse impacts to the New Cassel and Hicksville communities that will result from the construction of the remedy proposed by USEPA in its recently released Proposed Remedial Action Plan ("PRAP") for this newly enlarged federal Superfund site are numerous and have not been adequately evaluated. In fact, in USEPA's own words, one of the explicit purposes of this public comment period is for the Agency to inform itself of public concerns through public comment to the "detailed analysis section of the OU-1 Feasibility Study." Unfortunately, the August 15, 2013 public meeting ("Meeting") regarding the proposed remedy (held during the summer vacation season) was not well-publicized and attendance was sparse. This limited outreach shows that the USEPA has failed to make the public aware of and understand the proposed remedy and public sentiment will likely not be fully expressed until implementation is underway. Nevertheless, USEPA has an obligation to consider the significant impacts that the proposed remedy will impose on the communities, and to balance these impacts against the perceived benefits of the remedial action.

B. The Real Burdens on the Community Far Outweigh Any Theoretical Benefit From the Proposed Plan.

At the Meeting, after describing the types of chemicals and the levels of contamination, USEPA assured those in attendance that there currently is no exposure pathway and no risk of harm to humans from the detected plumes. Interestingly, USEPA's assurances are powerful support for proposed Remedial Alternative 1, which is taking no further action because of the absence of any exposure pathway. The four other Remedial Alternatives evaluated by USEPA were given short shrift at the Meeting and were only briefly explained. Despite this public admission, and despite the lack of an exposure pathway, USEPA rejected the no further action remedy.

Instead, USEPA proposed a multi-million dollar hybrid Remedial Alternative which includes in-well vapor stripping and treatment of vapor-phase contamination at an on-site central treatment plant; extraction of groundwater via pumping and ex-situ chemical treatment such as in-situ chemical oxidation ("ISCO") to target high concentration contaminant areas, and long-term monitoring in conjunction with the implementation of institutional controls. The exact numbers of in-well vapor stripping and extraction wells and their placement is not known and will not be determined until the remedial design. Similarly, the location for the centralized treatment plant with the capacity to achieve contaminant mass removal and containment objectives of the remedy has not been identified in the PRAP. These factors call into question the cost effectiveness of the Proposed Plan.

The overarching sentiment expressed by those members of the public that attended the Meeting as well as those that attended prior public meetings held by USEPA in 2011 was that the public was not pleased about being "honored" as a federal Superfund site (their words). The concern expressed by business owners and residential homeowners alike was that this high profile listing will devalue homes and commercial real estate and, instead of encouraging development and growth of this already economically stressed community, USEPA's NPL listing of the area as a federal superfund site and the proposed remedial action create an adverse stigma to the area. Furthermore, since USEPA admits there are no exposure pathways, and no danger to the population, the extraordinary costs to implement the selected remedy, (estimated to be in excess of $23 million) will be an unnecessary burden to the local communities.

For the purpose of preparing this commentary, members of the New Cassel Business Association were contacted. In addition to the concerns expressed above, they also are concerned that construction of the magnitude required for the implementation of the USEPA proposed remedy will present an intolerable and long term disruption to commercial and retail operations in the area and will chill any efforts to attract new employers to the aging neighborhood. New York State has designated New Cassel as an Empire Zone to promote development. However, construction of the proposed remedy with its drilling of multiple wells and installation of miles of piping, construction of the centralized treatment facility and other associated activities will undermine this designation and will disrupt installation of any new infrastructure to support planned retail and commercial hubs.

The physical construction and ongoing operation of the components of the remedy is a matter of much public impact and distress. The remedies of in-well vapor stripping and ex-situ groundwater extraction and re-injection will require multiple sites for wells to be drilled and installed. Access to install these wells is complicated and would have to be considered only in non-residential areas. Local business owners and residents believe that their property values will plummet from having all these wells, pipes, a 4,000 square-foot centralized treatment building and associated apparatus installed throughout the area. The remedy requires chemical treatment which creates other ongoing safety hazards to the public. The construction of these systems is disruptive to traffic, will cause dust and noise and inaccessibility to large areas at a time and will require vigilant security to avoid ultimately becoming sites of "attractive nuisance" to children, teenagers and others.

During the 2009 Pre-Design Investigation, the NYSDEC found that local town and county officials were concerned that the installation and operation of in-well vapor stripping units within public rights-of-way will be logistically difficult given the presence of many utilities, including water, gas, electric, sanitary sewer, and storm sewers.

Relying on in-well vapor stripping in a densely populated setting is unwise. It will require the installation of large numbers of wells and associated infrastructure which will result in a significant disruption in a largely residential area. Furthermore, USEPA does not yet even know if the in-well vapor stripping process will be able to achieve Class GA drinking water standards. The depth of the deepest contamination which is estimated to extend to 502 feet below ground surface increases the design challenges. Limits on the hydraulic depth to which the compressed air can be injected into the aquifer limits the effectiveness of the stripping

method to only a portion of the well. Yet, the Agency insisted on imposing this proposal and costly remedy on the public.

Moreover, utilizing extraction and treatment increases both capital costs and annual operations and maintenance costs without providing a significant reduction of contaminants. Potential air pollution from off-gas effluent is also a public impact. In essence, the proposed remedy will create an exposure pathway to these pollutants, where none presently exists. Furthermore, with this remedy, in addition to the extraction wells, four infiltration wells would be necessary to effectively infiltrate every 100 gallons per minute of treated groundwater. Each infiltration well would have a diameter of eight feet and depth of fifteen feet and would need to be spaced a minimum of fifty feet apart from each other and ten feet from any structure. Thus, a huge parcel of land would be necessary for location of these infiltration wells. The location was assumed by USEPA to be adjacent to the BGEWD supply wells, in the vicinity of the Basin #51 parcel, but it is not certain that this plan is feasible.

ISCO treatment, which is planned in areas of the eastern plume which USEPA contends contain the highest concentrations of contamination, includes the injection of chemical agents, such as ozone, hydrogen peroxide, pursulfate or potassium permanganate. This mixing and injection process has to occur on the surface prior to injection. Thus, this methodology is fraught with potential hazards to public health and safety. There is an opportunity for spills, leaks or regurgitation of injections – again creating an exposure pathway endangering humans. During the implementation, the area would have to be sectioned off to prevent unauthorized access and at the end of each day of application, the chemical reagents would have to be removed or properly secured to prevent contact with residents in the area. Furthermore, as mentioned in the PRAP, since the application of the chemicals to treat the contamination will occur only 330 feet below the screen zone of the BGEWD supply wells, a real possibility exists that the very chemicals used to treat the contamination could end up adversely impacting the drinking water itself! A fate and transport study has yet to be conducted to see if the application of chemicals through the ISCO process will impact the very drinking water sought to be protected. Despite this lack of crucial information, USEPA chose to include this remedial procedure as part of its proposed remedy.

Moreover, since the radius of influence of the ISCO chemicals is only 10-15 feet, numerous injection points will be needed. Accordingly, in an area 100' by 100' -- the size of an average back yard -- it will be necessary to have over 32 permanent injection points. The USEPA estimates that two injection events will occur, but the Agency readily admits that more may be necessary to be effective. Plus, these multiple injection points can possibly affect public subsurface utilities. What's more, if subsurface confining layers are discovered, USEPA will have to pressurize the injections, which can create a variety of health and safety problems for the workers and the public and will increase the probability of re-surfacing of the caustic reagent from pre-existing preferred conduits, such as sewer drains or improperly abandoned wells.

Lastly, the USEPA proposed remedial techniques are environmentally unsustainable for the community because they require an enormous use of electricity and they are not being designed in accordance with USEPA Region 2's Clean and Green Energy Policy, which would necessitate consideration of green remediation technologies and practices. The reinjection of the

treated water back into the ground creates a mounding at the subsurface and can potentially impact the temperature and characteristics of the groundwater into which it is re-injected, the very public resource sought to be protected.

Against these many risks and community concerns, USEPA must balance the limited and uncertain value of reducing contaminant levels in deep ground water when those contaminants have no exposure pathway to the public. The theoretical benefit of such treatment is outweighed by the disruption and risks to the public, and the severely negative impact on needed economic development in the area that would be caused by the remediation activities.

III. CONTINUED WELL-HEAD TREATMENT AT THE BOWLING GREEN WELLS PLUS MONITORED NATURAL ATTENUATION IS THE APPROPRIATE REMEDY FOR OU-1

The USEPA's proposed remedy for OU-1 fails to accord sufficient weight to the fact that the potential exposure pathway for the groundwater contamination has been eliminated. The only remotely conceivable exposure pathway is through drinking the deep groundwater containing the chemicals of concern. The data developed over almost 30 years shows that this exposure pathway has already been eliminated by the installation of treatment systems that have been in operation for several decades. In addition, the suspected sources of the contamination have undergone on-site remediation, thereby eliminating the potential sources of additional off-site groundwater contamination. Accordingly, USEPA's proposed remedy is unnecessary and is inconsistent with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §§ 9601 *et seq.*, ("CERCLA") or the National Contingency Plan ("NCP").

The investigation of contaminated groundwater in and around the area of concern began in the mid-1980s by the NCDH and the NYSDEC. Volatile organic compounds ("VOCs") were first detected in the local groundwater in 1986. The NCDH thereafter conducted a county-wide investigation that identified the NCIA as an area of groundwater contamination.

In 1988, the NYSDEC listed the entire 170-acre NCIA as a Class 2 site on the New York State Registry of Inactive Hazardous Waste Disposal Sites. Upon listing the NCIA, the NYSDEC hired an outside firm to conduct PSAs of the entire NCIA to locate sources of groundwater contamination. Among other things, the firm investigated off-site groundwater contamination migrating from the NCIA toward water supply wells. The NYSDEC identified the BGEWD supply wells as the down-gradient recipient of groundwater migrating from the NCIA.

VOCs were detected in the BGEWD supply wells beginning in 1989, but at concentrations that did not exceed the MCLs used by the NYSDEC, which are more stringent than the MCLs used by the USEPA. Although VOCs have been detected in the BGEWD supply wells from time to time thereafter, they have not exceeded the MCLs.

In 1989, a year after the NCIA was listed as a Class 2 site on the Registry, the Town of Hempstead Water Department ("Water Department") hired an environmental firm, D&B, to

recommend a "long-term treatment option" for remediating the groundwater contamination migrating from the NCIA into the BGEWD supply wells. In November 1989, D&B reported that the contamination migrating from the NCIA to the BGEWD supply wells remained below New York's MCLs, but it recommended the installation of a granulated activated carbon treatment system, (the "GAC System"), to ensure these levels remained below the MCLs.

The GAC System was fully constructed by mid-December 1990. Tests following completion of construction showed that VOC concentrations in the BGEWD supply wells remained below state MCLs even without treatment through the system. Between 1990 and spring 1995, the GAC System was the exclusive remedy to treat the groundwater for the BGEWD supply wells. The GAC System remains in use today, more than twenty-two years after its construction and the drinking water continues to meet the state MCLs.

In May 1995, the NYSDEC and New York State Department of Health jointly held a public meeting concerning the groundwater contamination. After the public meeting, D&B was hired to identify further remedial options. In late May 1995, D&B recommended supplementing the GAC System with a thirty-foot air stripper tower. Physical on-site construction of the air stripper tower commenced on June 12 and 13, 1995. The air stripper tower was not designed to respond to an imminent threat to the BGEWD supply wells; rather, the Water Department installed it to keep the water within quality standards. In public comments, the Water Department emphasized that the water supply remained "safe to drink" and that the air stripper tower was being installed as a "precautionary measure." For eighteen years, the air stripper tower has been used in conjunction with the GAC System and the drinking water continues to meet the state MCLs.

The air stripper tower is designed to augment the GAC System. Specifically, in a May 23, 1995 letter to the NYSDEC's Director of the Division of Hazardous Waste Remediation, the Town of Hempstead's Presiding Supervisor noted that "***the carbon treatment system has kept the water within quality standards***." And in response to questions from local residents, the Water Department emphasized that "***the water is safe to drink*** and has been up to the present time and will continue to [be]," that it was unnecessary for residents "to buy bottled water," and that the air stripper tower was "being installed at this point in time ***as a precautionary measure***."

In 1995, the NYSDEC began an area-wide Remedial Investigation/Feasibility Study relating to the off-site groundwater contamination migrating south from the NCIA. The NYSDEC adopted a Record of Decision ("ROD") in 2003 for this off-site groundwater, which included the GAC System and air stripper tower as part of the selected permanent remedy. To date, the GAC System and air stripper tower remain the only part of the permanent remedy that has been implemented and the VOCs detected in the BGEWD supply wells have remained below the state MCLs.

The installation of the GAC System and air stripper tower are appropriate actions as CERCLA explicitly contemplates remedial actions that are designed only to "minimize"—not eliminate—"the release of hazardous substances." 42 U.S.C. § 9601(23). Indeed, the statute lists a number of examples of remedial action that would not "remediate the underlying source"

of contamination, including "confinement," "clay cover," "diversion," and "provision of alternative water supplies." *Id.* By removing VOCs from the groundwater drawn into the BGEWD supply wells, the GAC System and air stripper tower in fact do *more* to address the underlying contamination than these statutory examples. The GAC System and air stripper tower *do* in fact "clean[] contaminated water" and "rid[] the environment of contamination," and thereby minimize the release of hazardous substances "to protect the public health and welfare." *Id.*

USEPA and the New York State Department of Health have both acknowledged that there currently is no exposure pathway that would create a public health risk so long as the engineering controls are in place at the Bowling Green wells. Moreover, the Final Baseline Human Health Risk Assessment (HDR, May 2013) for OU-1 is expressly based on a purely hypothetical scenario that "the engineering control in place at the Bowling Green Water District is discontinued in the future." (p. 38; see also pp. 9, 43). Therefore, the whole premise of the risk assessment upon which USEPA's remedy selection is based is a completely imaginary scenario that almost certainly will never occur. USEPA can assure that the hypothetical scenario does not occur, consistent with the NCP, by requiring the continuation of the existing engineering controls, coupled with institutional controls on the use of ground water. See 40 CFR 300.400(a)(1)(iii)(D).

In addition, the sites within the NCIA have all undertaken remedial efforts so that the sources of groundwater contamination migrating from these sites have been removed. As a result, the levels of groundwater contamination migrating from the NCIA will decrease and the residual levels can be monitored to assure that they are being further reduced by natural attenuation.

One other point, Nassau County is fully developed and there are no plans to add any new water districts or public water supply wells. The NCDH and each of the approximately 50 separate public water suppliers in Nassau County routinely monitor and test both treated and untreated water from the supply wells to assure that the drinking water meets the MCLs. In the remote hypothetical chance that a new water district is formed south of the NCIA or new supply wells are drilled in areas that could intersect with groundwater plumes migrating south of the NCIA, and if VOCs are detected in these wells, they can be handled in the same successful fashion as is being done at the BGEWD supply wells by a GAC System and air stripper tower. This would fully eliminate the potential exposure pathway. As noted above, no such plans to form a new water district or install new supply wells have been announced, proposed or even hinted about.

Thus, the USEPA's proposed remedy is unnecessary as the existing systems already in place have eliminated the exposure pathway and the sources.

IV. THE PROPOSED PLAN IS INCONSISTENT WITH THE NCP BECAUSE THE PLAN IS NOT COST-EFFECTIVE

The Proposed Plan for the New Cassel/Hicksville Groundwater Contamination Superfund Site (the "Site") is inconsistent with the NCP because it is not cost effective. 40 C.F.R.

§300.430(c)(9)(iii). "Each remedial action selected shall be cost-effective...." §300.430(f)(1)(ii)(D). "The NCP is designed to make the party seeking response costs choose a cost-effective course of action to protect the public health and the environment." *United States v. Chapman*, 146 F.3d 1166, 1170 (9th Cir. 1998).

"A remedy shall be cost-effective if its costs are proportional to its overall effectiveness." §300.430(f)(1)(ii)(D). Overall effectiveness is determined by balancing the following primary balancing criteria: (1) long term effectiveness and performance; (2) reduction in toxicity, mobility and volume through treatment; and (3) short-term effectiveness. *Id.* Overall effectiveness is then compared to the cost. *Id.* The Proposed Plan does not meet this legal requirement.

A. Long-term Effectiveness and Permanence

Long term effectiveness and performance is assessed using the following factors: (1) magnitude of the residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities; and (2) the adequacy and reliability of controls such as containment systems and institutional controls that are necessary to manage treatment residuals and untreated waste. §300.430(e)(9)(iii)(C).

There is no residual risk remaining from untreated water at the Site, because the MCLs have never been exceeded and since 1990 the drinking water has been treated to remove the low levels of VOCs in the drinking water. Even after the installation of USEPA's Proposed Plan, the town's water supply will still require the current well-head treatment.[2] Put simply, the proposed remedy does not make the drinking water any safer than it already is. Additionally, there is a risk that the Proposed Plan could result in the contamination of the upper aquifer. Putting aside the lack of any exposure pathway and the fact that that drinking water has not exceeded the MCLs, the proposed in-well vapor stripping may not be efficient enough to achieve Class GA drinking water in areas of the plumes. A pilot study is necessary to determine if Class GA water quality standards could even be achieved by the proposed remediation.[3] If the stripping process does not achieve Class GA standards, the upper aquifer is at risk of contamination by the groundwater treated by in-well vapor stripping.[4]

There is nothing effective in treating contamination, where treatment is already being provided to eliminate public risk, and the proposed additional treatment, undertaken at enormous expense, will not change or substantially enhance those effective risk controls already in place.

B. Reduction of Toxicity, Mobility or Volume through Treatment

[2] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 6-4 (July 2013)
[3] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 5-14 (July 2013)
[4] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 6-7 (July 2013)

The reduction of toxicity, mobility or volume concerns the degree to which the alternatives employ recycling or treatment that reduces toxicity, mobility or volume. §300.430(e)(9)(iii)(D). The following factors are considered: (1) the treatment or recycling processes the alternatives employ and the materials they will treat; (2) the amount of hazardous substances, pollutants, or contaminants that will be destroyed, treated or recycled; (3) the degree of expected reduction in toxicity, mobility or volume of the waste; (4) the degree to which the treatment is irreversible; (5) the type and quantity of residuals that will remain following treatment; and (6) the degree to which the treatment reduces the inherent hazards posed by the principal threats at the site. *Id.*

Although the Proposed Plan could result in the reduction of chlorinated VOCs, such reduction is not necessary for public health because there is already a water treatment system in place that capably removes VOCs to below safe drinking water standards. The proposed additional treatment will not "reduce[ ] the inherent hazards posed by the principal threats at the site." Therefore, the Proposed Plan is essentially treatment for its own sake, not to achieve a meaningful reduction in hazard.

C. Short-Term Effectiveness

The short-term impacts are evaluated using the following factors: (1) short-term risks that might be posed to the community during implementation of an alternative; (2) potential impacts on workers during remedial action and the effectiveness and reliability of protective measures; (3) potential environmental impacts of the remedial action and the effectiveness and reliability of mitigation measures; and (4) the time until protection is achieved. §300.430(c)(9)(iii)(E).

The Proposed Plan requires on-site mixing of chemical reagents, which presents an unnecessary risk of exposure to workers and residents of the community.[5] Additionally, the chemical reagents will likely be injected into the ground under high pressure.[6] When chemical reagents are injected under pressure, the chemicals may find their way to the surface through preferential pathways and present additional exposure hazards for the community.[7]

There is also an unnecessary risk to workers from the proposed groundwater extraction system.[8] Since the Proposed Plan requires the groundwater to be transferred under pressure to the centralized treatment plant, there is a risk of release of contaminated groundwater.[9]

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[5] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 6-10 (July 2013)
[6] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 6-10 (July 2013)
[7] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 6-10 (July 2013)
[8] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 6-7 (July 2013)
[9] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 6-10 (July 2013)

The in-well vapor stripping system will be susceptible to clogging from the precipitation of iron once the groundwater has been oxygenated.[10] This will compromise the effectiveness of the Proposed Plan. Overall, the Proposed Plan introduces short-term risks without achieving any reduction of long term risks.

D. The Costs of the Proposed Plan are Unnecessarily High Compared to Overall Effectiveness

It is not cost effective to have two systems in place to bring VOC concentrations to below safe drinking water standards. Since 1990, the GAC System is in place at the BGEWD supply wells. In 1995, an air stripper tower was installed as a precautionary measure. Additionally, there are four early warning wells located upgradient of the BGEWD supply wells to monitor groundwater contamination. This treatment system is still in operation and is effective at keeping VOCs concentrations to below safe drinking water standards. A $22.9 million remedial measure on top of that is unreasonable when there is already a safe and effective drinking water treatment system in place.

The Proposed Plan contains high costs that cannot be justified by the protection of public health. In-well vapor stripping is a patented technology that is only licensed to a limited number of vendors. Thus, a competitive bidding process will be compromised from the beginning. Furthermore, a suitable location for the centralized treatment plant has not been identified, despite efforts to find one. No compatible sites were identified within a quarter mile radius. Since the vapor from the in-well systems would need to be conveyed a long distance to the central treatment plant, several large vacuum blowers will be necessary, resulting in both a noise disturbance and increased costs.

For all of these reasons, the Proposed Plan is not consistent with the NCP and should not be implemented.

E. The Proposed Plan is not Cost-Effective because it is Not Coordinated with Proposed Action by New York State

The Proposed Plan is inconsistent with and not effectively coordinated with remediation measures contemplated by the NYSDEC at the Site. Attached is a recent letter from NYSDEC that contemplates two significant remedial expenses without any administrative or technical discussion in the Proposed Plan as to the cost-effectiveness or technical impact of these proposed expenditures.

NYSDEC proposes installation of a series of groundwater circulation wells at the Site down to 150 feet below grade north of Old Country Road. NYSDEC also proposes, at public expense, some as yet unpublicized remedial action plan for groundwater down to 250 feet in the same location. The Proposed Plan does not discuss the feasibility, impact or cost effectiveness of these proposals.

[10] USEPA, Supplemental Feasibility Study Technical Memorandum for Operable Unit 1 for the New Cassel/Hicksville Groundwater Contamination Superfund Site, at 6-12 (July 2013)

The NYSDEC proposed groundwater circulation well system in the upper 150 feet would remediate and influence the groundwater at least 150 feet south of Old County Road into the geographical area covered by USEPA OU-1 and the Proposed Plan. NYSDEC's action must be technically analyzed and publicly discussed by USEPA so that cost-effectiveness and technical feasibility is achieved. NYSDEC's proposed expenses are redundant, not complementary, with the remedial measures contemplated in the Proposed Plan. It is imperative that USEPA generate detailed technical analysis, and present it in the public record, of the existing and contemplated remedial measures at the Site. Without this remedial and feasibility analysis and coordinated technical review, USEPA cannot achieve cost-effectiveness and thus compliance with the NCP.

V. USEPA IS BARRED FROM PURSUING A CERCLA CLAIM AGAINST PARTIES WHO HAVE PREVAILED IN AN ACTION BROUGHT BY THE STATE UNDER CERCLA FOR THE SAME EVENT

Before selecting a remedial action that involves substantial expense and only limited practical benefit, USEPA should also consider the likelihood that it will not be able to recover response costs from responsible parties. Here, because any claim for recovery of response costs is likely to be time-barred, USEPA should be hesitant to embrace the expansive remedial program described in the proposed plan. As the State's claim for cost recovery under CERCLA already has been held to be untimely, a claim by USEPA will likely be foreclosed by principles of claim or issue preclusion.

In 2003, the NYSDEC brought an action under CERCLA "seeking to recover past and future response costs incurred by the State in responding to the alleged release and threatened release of hazardous substances at nine facilities that form the New Cassel Industrial Area Superfund Site, located in Westbury, New York," and to "redress harm to the public health and environment of the State resulting from defendants' alleged acts and omissions at the NCIA Site." *New York v. Next Millennium Realty, LLC*, CV-06-1133 SJF MLO, 2008 WL 1958002 (E.D.N.Y. May 2, 2008) (the "State Action"). The State plaintiffs' federal claims against the defendants were dismissed in their entirety with prejudice as being time-barred. *Next Millenium Realty, LLC v. Adchem Corp.*, CV-06-1133 SJF ARL, 2011 WL 6012042 (E.D.N.Y. Nov. 29, 2011).

USEPA would be barred under the principles of *res judicata* and collateral estoppel from naming the State Action defendants as potentially responsible parties ("PRPs") in any action it might bring to recover CERCLA response costs for cleanup of OU-1 because it is the same relief that was sought in the State Action in which summary judgment was granted against the State.

"Under res judicata, a final judgment on the merits bars further claims by parties or their privies based on the same cause of action." *Montana v. U. S.*, 440 U.S. 147 (1979). To prove *res judicata*, also known as claim preclusion, "a party must show that 1) the previous action involved an adjudication on the merits; 2) the previous action involved the plaintiffs or those in privity with them; and 3) the claims asserted in the subsequent action were, or could have been, raised in the prior action." *Monahan v. New York City Dept. of Corrections,* 214 F.3d 275, 285 (2d Cir. 2000) (citing *Allen v. McCurry*, 449 U.S. 90, 94, 101 S. Ct. 411 (1980).

With respect to the first requirement, courts have held that "a dismissal on statute of limitations grounds operates as a dismissal on the merits for res judicata purposes." *Quadrozzi Concrete Corp. v. New York,* 03 Civ. 1905 (LAP), 2004 U.S. Dist. LEXIS 19880 (S.D.N.Y. Sept. 30, 2004) (quoting *Karamoko v. New York City Hous. Auth.,* 170 F. Supp. 2d 372, 377 (S.D.N.Y. 2001), *aff'd* 2005 U.S. App. LEXIS 18212 (2d Cir. Aug. 23, 2005). Assuming the other elements of *res judicata* have been met, the federal district court's finding that the state's action was barred by the statute of limitations has a preclusive effect on any subsequent CERCLA claim that may be brought by USEPA.

With respect to the second element necessary to establish *res judicata*, the relationship between the federal government and governments of the states in the CERCLA context has been considered to be one of privity by the United States. *See State of New York v. Gen Elec. Co.,* No. 83-CV-1615, 592 F. Supp. 291, 294 n. 7 (N.D.N.Y. 1984) (where, in its *amicus curiae* brief, the United States described its interest in the case as follows: "First, the United States relies to a great extent on the response of states to the widespread problems generated by the disposal of hazardous wastes. Second, the United States is vitally interested in the outcome of actions brought under CERCLA to the extent that its own CERCLA actions may be affected by any adverse rulings.").

As to the third element, a cost recovery action brought by USEPA would be deemed sufficiently identical to the State Action for purposes of *res judicata.* The transaction or series of transactions at issue is the remediation of a single hazardous waste site, and USEPA's claim would require the same evidence as that presented in the State Action to prove liability. *See New York State Elec. & Gas Corp. v. FirstEnergy Corp.,* No. 3:03-CV-0438 (DEP), 2011 U.S. Dist. LEXIS 74216, *220 (N.D.N.Y. Jul. 11, 2011).

Under the doctrine of collateral estoppel, or issue preclusion, "once an issue is actually and necessarily determined by a court of competent jurisdiction, that determination is conclusive in subsequent suits based on a different cause of action involving a party to the prior litigation." *Montana v. U.S., 440 U.S. 147 (1979)*; *Parklane Hosiery Co. v. Shore*, 439 U.S. 322, 326 n. 5 (1979). In addition, collateral estoppel does not require the parties to the second action, or their privies, to have been bound by the original judgment. *Sathianathan v. Smith Barney, Inc.,* No. 04 Civ. 7122 (DAB) (FM), 2006 U.S. Dist. LEXIS 9828 (S.D.N.Y. Feb. 24, 2006).

The doctrine of collateral estoppel will preclude the relitigation of an issue decided in a previous proceeding even if the parties to the second action are not the same as those appearing in the earlier suit as long as: the issues in the proceedings are identical; the issue was actually litigated and decided in the prior proceeding; there was full and fair opportunity to litigate in the prior proceeding; and the issue previously litigated was necessary to support a valid and final judgment on the merits. *Sathianathan,* 2006 U.S. Dist. LEXIS 9828, at *51; *Liona Corp. v. PCH Assocs. (in re PCH Assocs.),* 949 F.2d 585, 593 (2d Cir. 1991). Here EPA would be barred from relitigating the issue of the classification of the response actions taken at the Site since that issue satisfies the elements of a collateral estoppel defense. In addition, USEPA would be collaterally estopped from relitigating the statute of limitations issue because all the elements are satisfied and, as courts have held, there can be only one remedial action for any given facility for statute of limitations purposes, and all cost recovery claims associated with a site are time barred when

remedial activity has been initiated more than six years before the commencement of a case. *See New York State Elec. & Gas Corp. v FirstEnergy Corp.*, 2011 U.S. Dist. LEXIS 74216, at *236-237.

In certain situations, a nonparty may be bound by a final judgment when there is a certain relationship between a party and a nonparty. *Taylor v. Sturgell*, 553 U.S. 880, 892 (2008). The issue of res judicata/collateral estoppel in the context of concurrent environmental enforcement action was addressed by the court in *United States v. ITT Rayonier, Inc.*, 627 F.2d 996 (9th Cir. 1980). In *ITT Rayonier*, the court held that the USEPA was collaterally estopped from asserting a position contrary to the state court action on the same issue against the same defendant. The court determined that the interests of the State of Washington Department of Ecology and USEPA were "identical and their involvement sufficiently similar," and shared "more than an abstract interest in enforcement." *ITT Rayonier, Inc.*, 627 F.2d at 1003. The court held that the sufficiently close relationship precluded relitigation of the issue already resolved in the state court. *Id.*

Further, in *Harmon Indus., Inc. v. Browner*, 191 F.3d 894 (8th Cir. 1999), both the State of Missouri and USEPA initiated actions naming the same defendant, and both actions involved the enforcement of regulations based upon identical facts and legal principles. 191 F.3d at 903. The *Harmon Indus., Inc.* court determined that because the State of Missouri advanced the exact same legal right under the statute as did USEPA in its administrative action, the identity of the parties requirement was satisfied for purposes of *res judicata*. The court also rejected USEPA's sovereign immunity defense based on the United States Supreme Court's decision in *Montana v. United States*, 440 U.S. 147 (1979), and dismissed USEPA's enforcement action on principles of *res judicata* although the United States was not a party to the state's suit.

For these reasons, USEPA would be barred from pursuing a cost recovery claim against the defendants named in the State Action because it has already been determined by the court that the claims are untimely and barred by the statute of limitations, and because any claim by USEPA for recovery of remedial costs for the Site arises out of the same event, transaction, and occurrence that was the subject matter of the State Action, which has been resolved and is final on the merits.